

REMARKS

Claims 1 to 33 are pending. Claim 4 has been canceled. Claims 28 to 33 have been withdrawn from consideration.

§ 112 Rejections

Claim 25 stand rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

In response, claim 25 has been amended.

In summary, Applicant submits that the rejection of claim 25 under 35 USC § 112, second paragraph, has been overcome, and that the rejection should be withdrawn.

§ 102 Rejections

Claims 1, 3, 5-6, 16-17 and 19 stand rejected under 35 USC § 102(b) as being anticipated by Buzzell et al. (US Pat. 6,582,642) when taken Kennedy et al. (US Pat. 5,260,015).

Claim 4 has been incorporated into claim 1, which is currently not under rejection.

§ 103 Rejections

Claim 2 stands rejected under 35 USC § 103(a) as being unpatentable over Buzzell et al. (US Pat. 6,582,642), when taken Kennedy et al. (US Pat. 5,260,015), and in view of de Navas Albareda (US Pat. 4,056,593).

Claim 4 has been incorporated into claim 2, which is currently not under rejection.

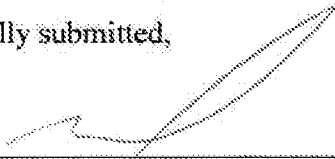
For the examiners reference, Buzzell et al. was addressed in the International Phase and attached hereto is the positive IPER and the response filed in the International Phase.

In view of the above, it is submitted that the application is in condition for allowance.
Reconsideration of the application is requested.

Allowance of claims 1-3 and 5-33, as amended, at an early date is solicited.

Respectfully submitted,

April 25, 2007
Date

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PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference
56999W0008

FOR FURTHER ACTION

See Form PCT/ISA/216

International application No.

PCT/US2005/005666

International filing date (day/month/year)

23.02.2005

Priority date (day/month/year)

09.03.2004

International Patent Classification (IPC) or national classification and IPC

INV. B29C43/22 A44B18/00

Applicant

3M INNOVATIVE PROPERTIES COMPANY

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☒ (sent to the applicant and to the International Bureau) a total of 2 sheets, as follows:
 - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic camera(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 602 of the Administrative Instructions).
4. This report contains indications relating to the following items:
 - ☒ Box No. I Basis of the report
 - ☐ Box No. II Priority
 - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - ☐ Box No. IV Lack of unity of invention
 - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement
 - ☐ Box No. VI Certain documents cited
 - ☐ Box No. VII Certain defects in the international application
 - ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand

09.01.2006

Date of completion of this report

20.06.2006

Name and mailing address of the international preliminary examining authority



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Box No. 1 Basis of the report

1. With regard to the language, this report is based on

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements* of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*.

Description, Pages

2-39 as originally filed

1, 1a received on 11.01.2005 with letter of 09.01.2005

Claims, Numbers

1-13 as originally filed

Drawings, Sheets

15-66 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (specify):
- ☐ any table(s) related to sequence listing (specify):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (specify):
- ☐ any table(s) related to sequence listing (specify):

* If item 4 applies, some or all of these sheets may be marked "superseded."

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-13
	No: Claims	
Inventive step (IS)	Yes: Claims	1-13
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-13
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V.

1. Document US-B-6582642 (D1) discloses (cf. fig. 13, 13a, 1 and 2; col. 14, line 60-col. 15, line 22) a method of manufacturing a stretched mechanical fastening web laminate comprising a thermoplastic web layer (ref. 10) having two major surfaces, one of the major surfaces bearing a multitude of male fastening elements (ref. 11) suitable for engagement with a corresponding female fastening material, and on its other major surface a fibrous web layer (knitted fabric 19), said method comprising the steps of

- (i) providing the fibrous web layer having an initial basis weight,
- (ii) passing the fibrous web layer through a nip formed by two rolls (ref. 14 and 16), one of them (ref. 14) having cavities (cf. col. 7, line 5-6) that are the negatives of a plurality of male fastening elements, introducing a molten thermoplastic resin (ref. 20) into the cavities in excess of an amount that would fill the cavities, which excess forms the thermoplastic web layer (ref. 10), allowing the resin to at least partially solidify, and stripping (by passing about takeoff roller ref. 22) from the cylindrical roll having cavities (ref. 14) of a precursor web laminate thus formed comprising the fibrous web layer (ref. 19) and the thermoplastic web layer (ref. 10) bearing a plurality of male fastening elements (ref. 11), whereby the thermoplastic web layer has an initial thickness ($t_1 + \Delta t$, cf. fig. 7) and an initial hook density, and
- (iii) stretching the precursor web laminate monoaxially (widthwise) thereby decreasing the thickness of the thermoplastic web layer (ref. 10) from its initial value (by Δt ; cf. col. 8, line 41-44).

As disclosed in col. 15, line 1-2, the fibrous web does not essentially shorten when stretched widthwise. This means that its weight per unit area decreases when stretched in the width direction. Consequently, for the combined effects of the reduction of thickness of the thermoplastic web layer and the deformation behaviour upon stretching of the fibrous web, the weight per unit area of the laminate decreases.

The method of claim 1 differs from that disclosed in D1 only in that the laminate is stretched to such an extent that its weight per unit area is less than 100 g/m^2 .

Such a low weight is necessary in order to use the laminate as a fastening element applied to the back of sanitary napkins (cf. description on page 2, lines 19-22).

Document D1 discloses that single layer webs, after stretching, can have a thickness in the range 0.001 inch to 0.002 inch, which, in case of PET, corresponds to a weight per unit area of about 35 g/m^2 to 70 g/m^2 (25 g/m^2 to 50 g/m^2 in case of PP).

Even if it is assumed that the same level of stretching is reached when the web provided with the fastening elements is laminated with a knitted fabric, as in the embodiment described in figures 13 and 13a, from the disclosure of D1 the skilled reader is not able to determine whether the weight per unit area of the stretched laminate is above or below 100 g/m^2 . As he will not find in D1 any hint to reduce the areal weight to below 100 g/m^2 , to the subject matter of claim 1 is to be recognised an inventive step, whereby the requirements of Art. 33 PCT are met.

2. For the same reasons, also the stretched mechanical fastening web laminate obtainable by the method of claim 1 is considered to fulfill the requirements of Art. 33 PCT.

3. Document WO-A-0359108 (D2) represents the closest state of the art for the method of claim 2. D2 discloses (cf. page 5, line 29-page 6, line 21; fig. 1-4) a method of manufacturing a stretched fastening web comprising (i) extruding a thermoplastic web, comprising a base (ref. 53) bearing on one major surface a plurality of elongated spaced ribs in longitudinal direction (ref. 54) with the cross-sectional shape corresponding to that of the male fastening elements (ref. 14), (ii) slitting the ribs in transverse direction at spaced locations to form discrete portions (ref. 57) with a width essentially corresponding to the length of the male fastening elements and (iii) stretching the web in longitudinal direction, whereby spaces are formed between the cut portions (ref. 57) which become the fastening elements (hooks, ref. 14) of the finished fastening web.

The subject matter of claim 2 differs from D2 in that it comprises, before the step (ii), an additional step in which a fibrous web is extrusion-laminated onto the major surface of the thermoplastic web, opposite to that bearing the elongated ribs.

Even if the problem solved is only seen as to find an alternative to D2, to the method according to claim 2 is to be recognised an inventive step, because a person skilled in the art would not find in D2 or elsewhere in the available prior art any hint towards the lamination of the thermoplastic web with a fibrous web. Therefore the subject matter of claim 2 meets the requirements of Art. 33 PCT.

4. Claims 3 to 11 and 13 are dependent respectively upon claims 1 and 12 and, as such, also meet the requirements of the PCT with respect to novelty and inventive step.

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-1-

METHODS OF MANUFACTURING A STRETCHED MECHANICAL FASTENING WEB LAMINATE

Field of the Invention

5 The present invention relates to methods of manufacturing a stretched mechanical fastening web laminate and to stretched mechanical fastening web laminates which are obtainable by such method. The present invention also relates to disposable absorbent articles such as diapers, sanitary napkins, pantyliners and incontinence pads comprising a portion of the mechanical fastening web laminate obtained from the corresponding
10 mechanical fastening web laminate, for example, by cutting.

Background of the Invention

US 6,582,642 discloses a method of producing a sheet form fastener product comprising

- 15 a. lengthwise stretching a sheet of heat-softened synthetic resin to pre-orient the molecular structure of the sheet in a longitudinal direction;
- b. with a rotating mold roll, molding from said lengthwise-stretched sheet a running web having a base and a multiplicity of discrete fastener elements integral with the base and protruding from at least one side of the base; and
- 20 c. thereafter, under conditions in which the web is permanently stretchable, stretching the web widthwise in a manner that permanently stretches the base and increases the widthwise spacing of the fastener elements.

 In a specific embodiment illustrated in Fig. 13 of US 6,582,642, it is suggested to feed a precompressed knitted web into a nip comprising said rotating mold roll thereby
25 creating an integrated laminate comprising the knitted web and the web having a base and a multiplicity of discrete fastening elements integral with the base. The precompressed knitted web does not tend to shorten longitudinally upon stretching the laminate widthwise so that the thickness of the knitted web is not decreased to a major extent. Stretching of non-precompressed knitted webs is furthermore difficult to
30 perform.

1a) US 6,484,371 discloses a mechanical fastener comprising a hook web and a loop material applied to a first major surface of each hook web. The hook web comprises a uniaxially oriented polymeric substrate bearing a plurality of hooks disposed on the second major surface of the hook web opposite to the first major surface. The thickness

-1a-

WO 03/059,108 discloses a method for forming a unitary polymeric projection or fastener comprising a thin, strong flexible backing, and a multiplicity of thin spaced hook members projecting from the upper surface of the unitary backing the method generally including extruding a thermoplastic resin through a die plate which die plate is shaped to form a base layer and spaced ridges, ribs or hook elements projecting above a surface of the base layer. When the die forms the spaced ridges or ribs the cross sectional shape of the hook members are formed by the die plate while the initial hook member thickness is formed by transversely cutting the ridges at spaced locations along their lengths to form discrete cut portions of the ridges. Subsequently longitudinal stretching of the backing layer (in the direction of the ridges on the machine direction) separates these cut portions of the ridges, which cut portion then form spaced apart hook members. The lamination of a fibrous web layer to the thermoplastic hook web is not mentioned.

1. The written opinion of the ISA acknowledges novelty for all claims pending but an inventive step is only acknowledged for claim 2.
- 2.1. It is an object of the present application to provide a mechanically stable, thin web material which can be advantageously used, for example, as a back sheet in sanitary napkins (page 2, lines 19 - 21). The back sheet of sanitary napkins may preferably comprise male mechanical fastening means to securely attach the sanitary napkin to the undergarment (page 2, lines 9 - 12). It was another object of the application to provide a stretched mechanical fastening web having a low overall thickness and basis weight (page 2, lines 21 - 22).
- 2.2. It was found that a stretched mechanical fastening web laminate with a low basis weight of less than 100 g/m² and a high tensile strength in machine direction MD can be obtained when stretching a laminate comprising a hook layer 13 and a fibrous web layer 11. After stretching the fibrous web layer typically is not any longer a functional loop. It is just there to reinforce the hook layer and provide a higher mechanical strength. Reference is made in this connection to Table 1 on page 32 and to the corresponding graphical representation in Fig. 5 which show a distinct increase in MD

strength for the laminates of the present invention; see also p.30, Ins. 15-23.

In use the laminate provides, for example, the back sheet of a sanitary napkin whereby the hook side is exposed (see, for example, p.23, Ins. 7-20). Consequently the fibrous layer is not exposed which underlines that the loop layer is not supposed to provide a functional loop within the scope of the present application.

3. D1 (= US 6,582,642) relates to a process providing a web comprising stretched fasteners. It is stated in the last sentence of the abstract that added materials are typically joined with the stretched web, i.e. the added materials are typically not stretched themselves.

The only exception is the method shown in Figs. 13 and 13a and the corresponding passage in column 14, line 60 – column 15, line 22. The laminate used here includes, however, a microcreped, knitted woven material or fabric which is precompressed so that it can be stretched subsequently without tending to shorten longitudinally. It is stated in column 15, lines 23 – 27, that a product is obtained having touch fastener hooks on one side and touch fastener loops on the other side which means in other words a functional loop.

D1 does not provide any motivation to reduce the base weight of the knitted woven material. Quite to the contrary, the woven material is densified and creped together before stretching so that it can be returned to its usual state after stretching. Consequently the woven material of D1 does not provide an increased strength to the material upon stretching. The teaching in D1 is in general to increase rather than to decrease basis weight.

The knitted material of D1 would not be susceptible to decrease in basis weight by stretching. The fibers of knitted materials are elongated in the CD and MD direction so that such material would tend to break rather than to stretch, thereby decreasing tensile strength and resulting in manufacturing problems.

4. This means in other words that D1 does not provide any motivation to stretch the material of Figs. 13, 13a in a way that a material with a high MD strength and a low base weight is obtained. Quite to the contrary, the knitted fabric of Fig. 13, 13a of D1 is microcreped, i. e. precompressed, so that it returns upon stretching to its normal functioning state. The creeping process provides a material laid in a wave pattern, just waiting to be elongated without changing the properties of the material upon relaxation.

W. J. G. B. J.

Books

Acknowledgement of receipt

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20 c. thereafter, under conditions in which the web is permanently stretchable, stretching the web widthwise in a manner that permanently stretches the base and increases the widthwise spacing of the fastener elements.

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